UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/669,274	09/26/2000	Feliks Dujmenovic	ATI-000150BT	5685

25310 7590 04/18/2003

VOLPE AND KOENIG, P.C.
DEPT. ATI
UNITED PLAZA, SUITE 1600
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER
APPIAH, CHARLES NANA

ART UNIT	PAPER NUMBER
2682	2

DATE MAILED: 04/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/669,274	DUJMENOVIC, FELIKS	
	Examiner	Art Unit	
	Charles Appiah	2682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 September 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-9 and 11-15* is/are rejected.

7)☒ Claim(s) *5 and 10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 September 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP section 608.01(o). Correction of the following is required:

3. Claim 4 recites, "an output of each delay cell is coupled to an output of another of the delay cells". Applicant's specification, however as shown by Fig. 2 indicates, "an output of each delay cell is coupled to an input of another of the delay cells". Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-4, 6-9 and 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Atherly et al. (5,140,198)** in view of **Havens et al. (5,438,301).**

Regarding s claims 1, 7 and 13 Atherly discloses (with reference to Fig. 1) an apparatus, a receiver for use in wideband communication (see col. 1, lines 48-53), and a method for canceling an image signal from a received radio frequency signal, comprising: an oscillator (29) for producing a radio frequency signal (30, 34, col. 2, lines 42-54), a first mixer (22) having inputs to receive the oscillator component (30) and the received radio frequency signal (16), and outputting a signal (44), a second mixer (24) having inputs configured to receive an oscillator component (34) and the received radio frequency signal (18) and outputting a signal (46), a phase shift device (42) coupled with one of the mixers for receiving an output of the one mixer and outputting a phase shifted signal (output of 42), and a combiner (40), operatively coupled to the other of the mixers and the phase shift device (inputs into 40 from 36 and 42), for producing an image cancelled signal (see col. 1, lines 53-61, col. 2, lines 47-60 and col. 4, lines 14-28). Atherly shows combining an in-phase and quadrature components from the first mixer and second mixer to produce a combined signal with the image frequency components substantially attenuated or suppressed (see col. 5, lines 5-28). Atherly fails to teach using a ring oscillator for producing a radio frequency signal having in-phase and quadrature phase components.

Havens discloses a carrier signal generator that generates in-phase and quadrature-phase carrier signal components using an N-stage ring oscillator for generating signals equal magnitude and arbitrary phase difference (see col. 1, lines 56-

67). According to Havens implementing the oscillator as a ring oscillator produces balanced signals (including I and Q components), which differ in phase with the phase difference being a function of the number of stages of the ring oscillator (see col. 3, lines 38-64, col. 5, line 29 to col. 6, line 24).

It would therefore have been obvious to one of ordinary skill in the art to replace the oscillator and phase shift circuit of Atherly with a ring oscillator in order to produce desired in-phase and quadrature-phase signals having a wide frequency bandwidth as taught by Havens with reduced circuit components.

Regarding claim 2, Atherly further shows the phase shift device is coupled to the second mixer (42 being coupled to mixer 24).

Regarding claims 3, 8 and 15, Atherly further discloses wherein the phase shift device shifts a phase of the second mixer output by 90 degrees (see col. 2, lines 57-59).

Regarding claims 4 and 9, the combination of Atherly and Havens show (as taught by Havens), the ring oscillator being made up of N delay cells, where N is greater than or equal to two, with an output of each delay cell being coupled to an input of another of the delay cells (see col. 5, line 29 to col. 6, line 10).

Regarding claims 6 and 12, Atherly further discloses that the in-phase mixer is a conventional integrated circuit double-balanced mixer (see col. 3, lines 1-4) which functions as Gilbert cell mixers.

Regarding claim 14, Atherly shows that the one phase signal is the quadrature phase signal (output of 90 degrees mixer 24).

Allowable Subject Matter

6. Claims 5 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: With respect to claims 5 and 10 the prior art of record such as Martin et al. (5,180,994) teaches the use of voltage controlled ring oscillator made up of delay circuits with outputs from alternate delay circuits. The instant invention teaches an apparatus and a receiver for canceling an image signal from a received radio frequency signal including a ring oscillator made up of delay cells, the output of each cell being coupled to an input of another cell, wherein each delay cell delays its input by forty-five degrees and one of the couplings is cross-coupled so that the output of one of the delay cells is inverted prior to input into another of the delay cells.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Souetinov (6,324,388) discloses a radio receiver image rejection mixer circuit arrangement.

Bojer (6,029,059) discloses a quadrature mixer apparatus that mixes the in-phase and quadrature phases within the same cell.

Rokos (GB 2 239 143) discloses an arrangement for mixing RF signals with local oscillator signals in a zero IF direct conversion radio.

Fire (2,964,622) discloses an image suppressed superheterodyne receiver.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Appiah whose telephone number is 703 305-4772. The examiner can normally be reached on M-F 7:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 703 305-6739. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703 308-6296 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 306-0377.

CA
April 3, 2003

CHARLES APPIAH
PATENT EXAMINER